



COMMUNITY RISK REDUCTION MANUAL

CODE REQUIREMENTS

402.006 HIGH-PILED STORAGE PLANS

EFFECTIVE: JUNE 2008

SCOPE

This policy clarifies the Department's requirements for high-piled combustible storage plans.

PURPOSE

This policy has been established to clarify the minimum requirements for plan review for high-piled storage.

DEFINITIONS

High-Piled Combustible Storage. High-piled combustible storage is storage of combustible materials in closely packed piles or combustible materials on pallets, in racks or on shelves where the top of storage is greater than 12 feet in height. High-piled combustible storage also includes certain high-hazard commodities, such as: rubber tires, Group A plastics, flammable liquids, idle pallets, and similar commodities, where the top of storage is greater than six feet in height.

REQUIREMENTS

Rack Storage General Requirements

1. Building permits are required for all racks that are greater than five feet, nine inches in height.
 - a. Anchoring details are required for all racks greater than five feet, nine inches and up to eight feet in height
 - b. Engineered structural and anchoring calculations and details are required for all racks that are greater than eight feet in height
2. A High-Piled-Rack Storage Worksheet shall be completed and submitted to the City of Fresno Fire Department for review.

3. A typical rack (for submittals to the City of Fresno) requires the following:
 - a. Site plan
 - b. Floor plan
 - c. Rack and vent layout (where required) to include rack dimensions
 - d. Calculations for anchoring and structural configuration
4. A City of Fresno Fire Department use permit is required for any high-piled combustible storage in excess of 500 square feet of floor area.
5. It is recommended that the services of a licensed architect or engineer be used in the preparation of high-piled or rack storage plan submittals.

All High-Piled Storage Plans

Submit plans to the City of Fresno DARM addressing the following:

1. Floor plan of building showing fire department access doors.
2. Smoke/heat vent plan with details and specifications of smoke/heat vents. If an ESFR sprinkler system is specified, smoke/heat vents are not required. If an ESFR sprinkler system is to be installed, it must be noted on the plans.
3. Useable storage height for each storage area (to ceiling height of building).
4. Distances (specify distance) between top of storage and sprinkler deflectors.
5. Sprinkler design density and curve.
6. Maximum pile volume for each storage array.
7. Location of commodities which are banded or encapsulated.
8. Type of commodity to be stored and packing arrangement (cardboard, foam, encapsulated).
9. Location and classification of commodities in accordance with California Fire Code.
10. Valve locations for fire sprinkler system.

Structural columns within high-piled storage/racks may require special fire protection.

High-Piled Rack Storage Plans

In addition to the above information, the following information shall be provided on rack storage plan submittals:

1. Structural integrity: Obtain structural approval(s) from the City of Fresno; Building and Safety Services Division.
2. Floor plan of building showing locations and dimensions of high-piled storage racks.
3. Dimension and location of transverse and longitudinal flue spaces.
4. Aisle dimensions between each storage array.
5. Number of tiers within each rack and configuration (single, double, multi-row).
6. Configuration of storage in racks (pallets, shelving, bin boxes).

REFERENCES

California Fire Code

CFC CHAPTER 32: HIGH-PILED/RACK STORAGE WORK SHEET

Provide the following information (fill in blanks, check appropriate boxes):

Business Name/Address _____

1. Commodity to be stored _____

2. Fire Code classification of this commodity is class: ☐ I-IV ☐ High Hazard
CFC Section 3203

Tires = Special Requirements: Storage > 20,000 cubic feet requires fire sprinklers throughout building. CFC Section 903.2.9.2

3. Maximum storage height will be _____ feet, _____ inches.
If height is 12 feet, 0 inches or less and commodity class is I-IV, note on plan "NO HIGH-PILED STORAGE" and skip Items 4-12, complete No. 13 and you will be finished.

4. Total area of high-piled/rack storage planned is _____ square feet.
Area = rack/pile area + aisles + 15 feet from perimeter of racks/piles – or to walls.
CFC Section 3206.2

5. CFC Table Section 3206.2 ☐ Does ☐ Does not require access doors.
CFC Section 3206.6.1

6. Fire protection to be provided per CFC Table 3206.2, and Sections 3206.4, 3207, 3208, and 3209. ☐ NFPA 13 sprinklers ☐ ESFR sprinklers
Adequacy of fire sprinkler design for protection of proposed commodity/storage configuration shall be coordinated with your fire sprinkler system design professional.

7. Smoke/heat vents per CFC Table 3206.2: ☐ Required ☐ Not Required
If the building is equipped with an approved ESFR sprinkler system, smoke/heat vents are not required.

If Required, see CFC Table 910.3 for the following:

Vent ratio: 1:_____ ratio.

Maximum Spacing of Vents On-Center = _____ feet.

Maximum Distance: Vent to wall or curtain board = _____ feet

Minimum Clearance: 20 ft. to property line; 10 ft. to occupancy separation walls.

8. Draft Stops per CFC Table 3206.2: ☐ Required ☐ Not Required

9. Hose connections per CFC, Section 2306.8 ☐ Required ☐ Not Required
If required, install per CFC Section 905. For "Shell Buildings", locations may be deferred until TI.

10. Floor plans provided show:

- | | | |
|--------------------------------------|---|--|
| <input type="checkbox"/> Rack layout | <input type="checkbox"/> Pile configuration | <input type="checkbox"/> Hose connection locations |
| <input type="checkbox"/> Flue spaces | <input type="checkbox"/> Aisles* | <input type="checkbox"/> Shelving configuration |

* See special requirements for "high hazard" commodities CFC, Section 3206.9.1.1.

11. Provide portable fire extinguishers Class 4A:40B:C minimum (1 for each 6,000 square feet, maximum travel distance 75 feet). Show locations on the floor plan.

12. A high-piled storage permit is required from the Fire Community Risk Reduction Division, to be obtained by the tenant upon occupancy.

13. Name _____
Print Name of Person Completing Form

Phone No. _____

A copy of this completed document and a copy of the approved floor plan shall be provided with the deferred fire sprinkler plan check submittal.

Requirements are subject to change if commodity class, storage height or storage area changes.